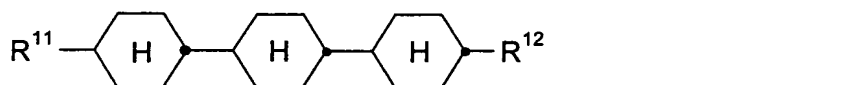


Patent Claims

1. A liquid-crystal mixture comprising a compound of formula I

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wherein

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R^{11} is an alkenyl or alkenyloxy radical having 2 to 7 carbon atoms;
and

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R^{12} is an alkyl or alkoxy radical having 1 to 12 carbon atoms or an
alkenyl or alkenyloxy radical having 2 to 12 carbon atoms, in
which optionally, one or more CH_2 groups are replaced by $-O-$,
 $-S-$, $-C\equiv C-$, $-CO-$, $-OCO-$ or $-COO-$ in such a way that
heteroatoms are not linked directly to one another.

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2. A liquid-crystal mixture according to claim 1, wherein
 R^{11} is an alkenyl radical having 2 to 7 carbon atoms; and
 R^{12} is an alkenyl radical having 2 to 7 carbon atoms.

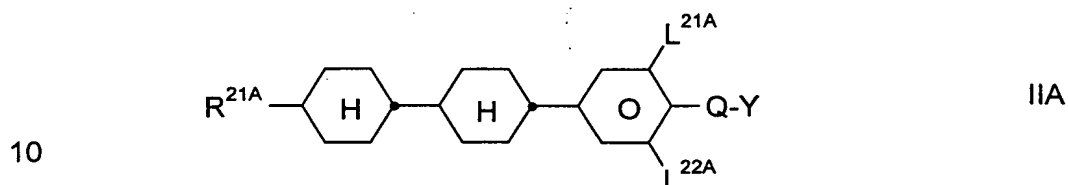
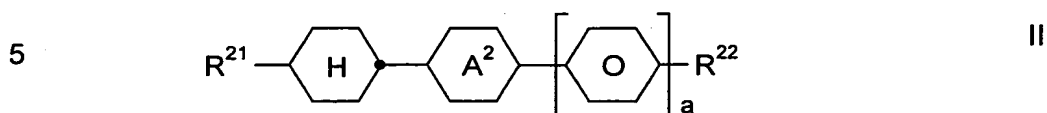
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3. A liquid-crystal mixture according to claim 1, wherein
 R^{11} is $CH_2=CH-$ or $CH_3-CH=CH-$; and
 R^{12} is $CH_2=CH-$ or $CH_3-CH=CH-$.

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4. A liquid-crystal mixture according to claim 1, wherein the compound of
the formula I is present in the liquid-crystal mixture in an amount of 1
to 25% by weight.

5. A liquid-crystal mixture according to claim 1, further comprising a compound of formula II and/or of the formula IIA:



wherein

R^{21} is an alkenyl or alkenyloxy radical having 2 to 7 carbon atoms;

15 R^{21A} is an alkenyl radical having 2 to 7 carbon atoms;

R^{22} is an alkyl or alkoxy radical having 1 to 12 carbon atoms or an alkenyl or alkenyloxy radical having 2 to 12 carbon atoms, in which optionally, one or more CH_2 groups are replaced by -O-, -S-, $-C\equiv C-$, -CO-, -OCO- or -COO- in such a way that

20 heteroatoms are not linked directly to one another;

the ring A^2 is 1,4-phenylene or trans-1,4-cyclohexylene;

a is 0 or 1;

Q is CF_2 , OCF_2 , CFH, OCFH or a single bond;

Y is F or Cl; and

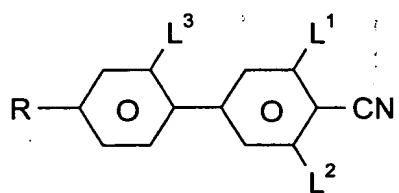
25 L^{21A} and L^{22A} are each, independently of one another, H or F;

wherein at least one of radicals R^{21} and R^{22} is an alkenyl radical.

6. A liquid-crystal mixture according to claim 1, further comprising a compound of formulae IIIa to IIIh:

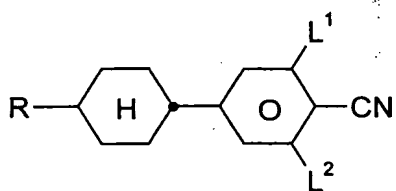
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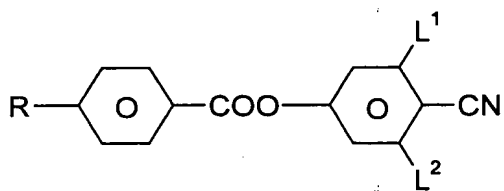
IIIa

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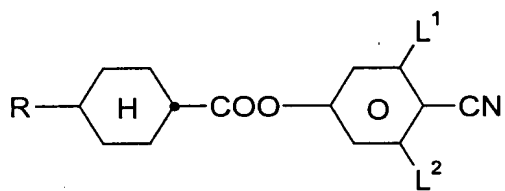
IIIb

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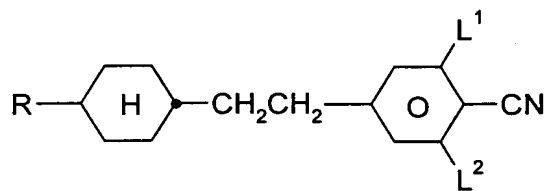
IIIc

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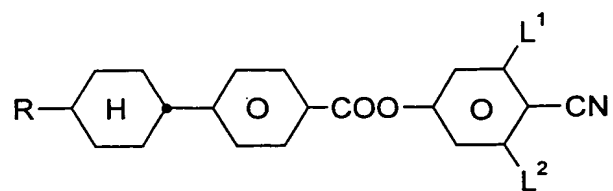
IIId

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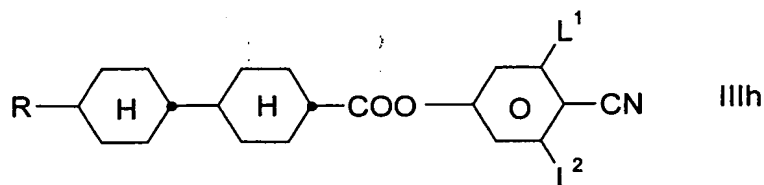
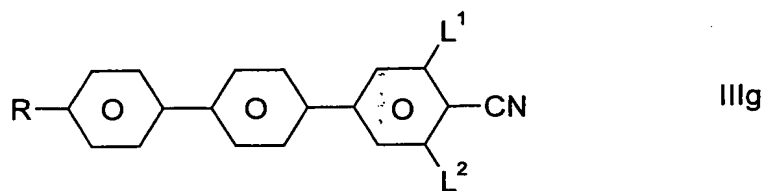


IIIe

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IIIf

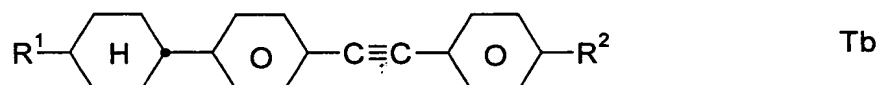
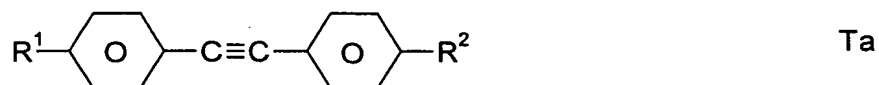


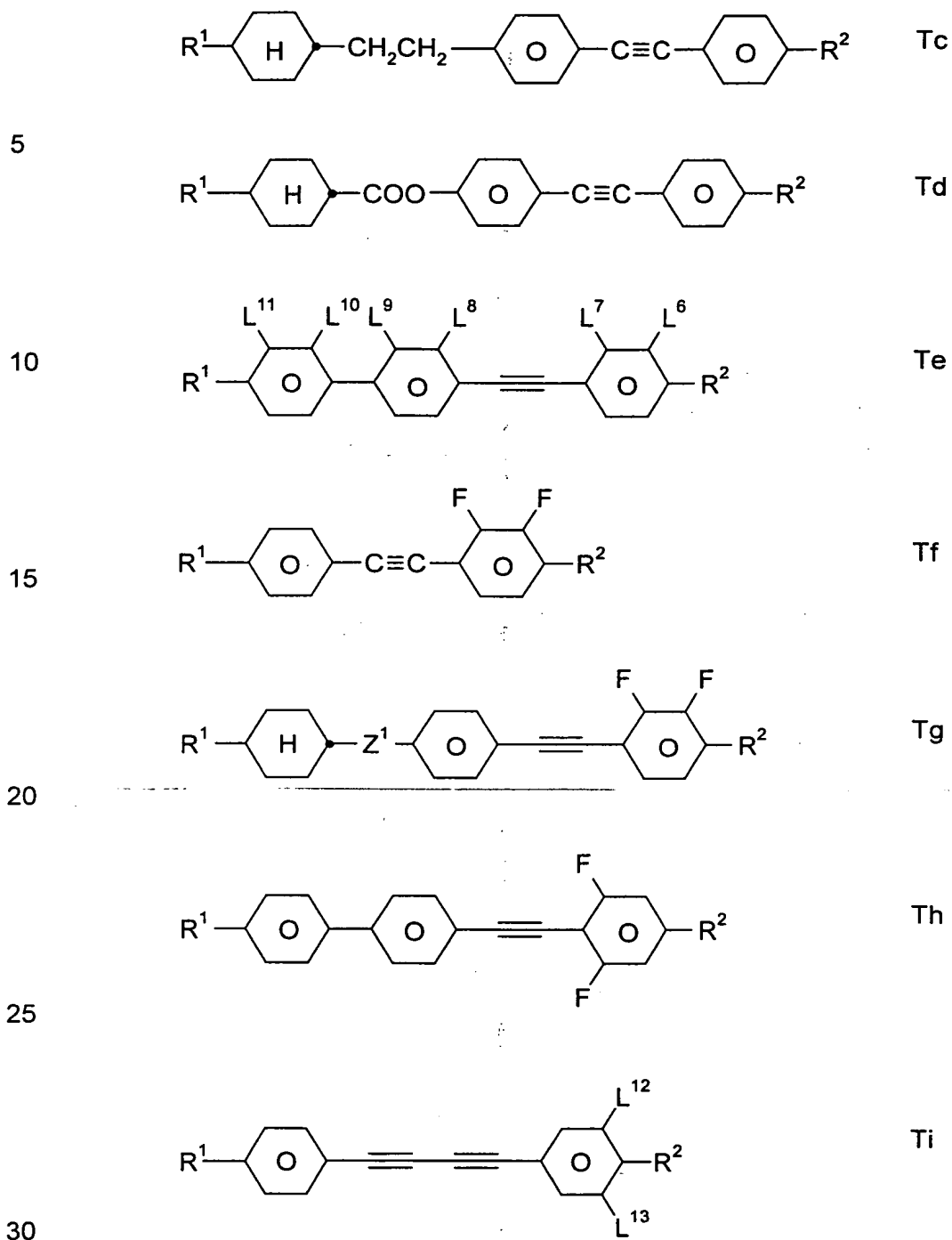
wherein

R is an alkyl or alkoxy radical having 1 to 12 carbon atoms or an alkenyl radical having 2 to 12 carbon atoms, in which optionally one or more CH₂ groups are replaced by -O-, -S-, -C≡C-, -CO-, -OCO- or -COO- in such a way that heteroatoms are not linked directly to one another; and

L¹, L² and L³ are each, independently of one another, H or F.

7. A liquid-crystal mixture according to claim 6, wherein the liquid-crystal mixture comprises a compound of formula IIIb or IIIc.
8. A liquid-crystal mixture according to claim 1, further comprising a tolan compound of formula Ta to Ti:





wherein

R¹ and R² are, independently of one another, an alkyl or alkoxy radical having 1 to 12 carbon atoms or an alkenyl radical having 2 to 12 carbon atoms, in which optionally one or more CH₂ groups are replaced by -O-, -S-, -C≡C-, -CO-, -OCO- or -COO- in such a way that heteroatoms are not linked directly to one another;

Z¹ is -CO-O-, -CH₂CH₂- or a single bond; and

L⁶ to L¹³ are each, independently of one another, H or F.

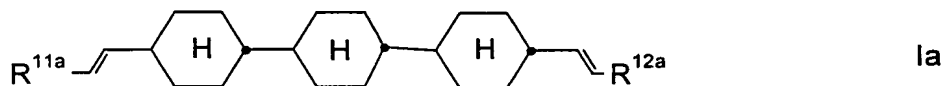
9. A liquid-crystal display containing a liquid-crystal mixture according to claim 1.

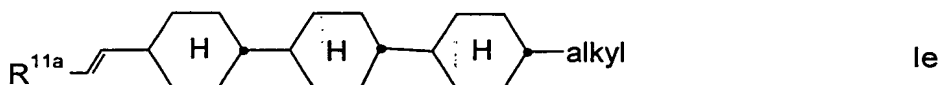
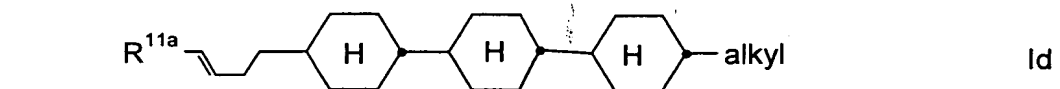
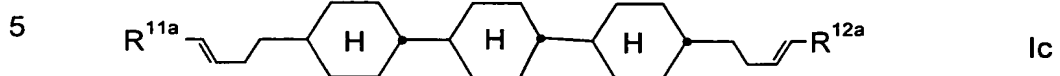
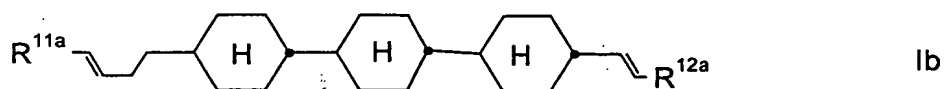
10. A TN or STN liquid-crystal display comprising
- two outer plates, which, together with a frame, form a cell,
 - a nematic liquid-crystal mixture of positive dielectric anisotropy located in the cell,
 - electrode layers with alignment layers on the insides of the outer plates,
 - a tilt angle between the longitudinal axis of the molecules at the surface of the outer plates and the outer plates of from 0 degree to 30 degrees,
 - a twist angle of the liquid-crystal mixture in the cell from alignment layer to alignment layer with a value of between 22.5° and 600°,
 - a nematic liquid-crystal mixture comprising
 - a) 15 – 80% by weight of a liquid-crystalline component A consisting of one or more compounds having a dielectric anisotropy of greater than +1.5;
 - b) 20 – 85% by weight of a liquid-crystalline component B consisting of one or more compounds having a dielectric anisotropy of between -1.5 and +1.5;

- c) 0 – 20% by weight of a liquid-crystalline component D consisting of one or more compounds having a dielectric anisotropy of below -1.5, and
- d) optionally, an optically active component C in such an amount that the ratio between the layer thickness and the natural pitch of the chiral nematic liquid-crystal mixture is from about 0.2 to 1.3,

wherein the nematic liquid-crystal mixture is according to claim 1.

11. A cholesteric liquid-crystal display, SSCT or PSCT display comprising one or more chiral dopants and a liquid-crystal mixture according to claim 1.
12. A liquid-crystal mixture according to claim 1, wherein the compound of the formula I is present in the liquid-crystal mixture in an amount of 2 to 20% by weight.
13. A liquid-crystal mixture according to claim 1, wherein the compound of the formula I is present in the liquid-crystal mixture in an amount of 3 to 15% by weight.
14. A liquid-crystal mixture according to claim 1, comprising a compound of formula Ia, Ib, Ic, Id, or Ie:





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 in which R^{11a} and R^{12a} are each, independently of one another, H, CH_3 , C_2H_5 or $n-C_3H_7$, and alkyl is an alkyl group having from 1 to 8 carbon atoms.

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 15. A liquid-crystal mixture according to claim 14, comprising a compound of formula 1a or 1e.

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 16. A liquid-crystal mixture according to claim 15, wherein R^{11a} and R^{12a} are, each independently H or CH_3 .

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